The Excavating Engineer

Vol. 17 SEPTEMBER 1923 No. 9

Mining Dolomite and Limestone on the Hudson

Description of Plants of the New York Trap Rock Corporation Along the Hudson River in New York with Particular Reference to the Marlboro Dolomite Plant

ALONG the picturesque shores of the Hudson, a traveller cannot fail to take note of the frequent quarry operations that come into view, shrouded in their white clouds of dust.

It is here to a great measure that New York's ravenous appetite for road-building and concrete materials is satisfied, and furthermore, it may be noted, is satiated without scarring over much the grandeur of that historic river's magnificent scenery.

Among the river's largest operators is the New York Trap Rock Corporation of New York. This company with two dolomite and one limestone quarry in operation, is shipping as high as 5,000 cubic yards of rock a day, which is taken down the river in a fleet of well over a hundred barges, 56 of which are owned, and the remainder chartered by the company.

The 50-B Bucyrus headed in immediately after the blast which supplied enough stone to keep it busy for about a month.

The Marlboro Plant

The most recent of these three plants to be acquired by this company is a dolomite operation situated at Marlboro, nine miles above Newburgh on the west bank of the Hudson, about half way between Albany and New York.

This deposit has been operated 16 years but was taken over by the company in 1919 and put into operation with all the most modern machinery.

It was not until this year, however, that shovel operation was started, with the installation of two new Bucyrus 50-B steam shovels. These machines are the most recent type turned out by that company, replacing the 35-B machine previously built. These shovels are mounted on caterpillars, and weigh about 57 tons with coal and water aboard. One carries a 1½-yard rock dipper and the other a dipper of 1¾-cubic-yards capacity. The 50-B is the only shovel of this size to be equipped with a locomotive boiler.

The deposit is, as stated, a dolomite, an extremely tough material which is accepted under standard tests by the American Society of Engineers as being in quality to trap rock.

The quarry lies close to the Hudson in two large bays, extending away from the river like the wings of a butterfly with the plant where the body should be between the two.

Shovel Operation

The face carried averages about 75 feet high. One shovel is in operation in each so-called "bay." The two shovels operate a ten-hour shift and average about 1,600 cubic yards in this period. The average daily output for the month of July was 1630 cubic yards, 40,000 yards having been turned out in the month of May.

The highest 10-hour run by one shovel has been to date 210 cars of 5 cubic yards each and for both shovels 345 cars.

The shovels load 5-yard Western cars, five to a train. The hauling is done with four 9-ton Whitcomb gasoline locomotives.

In addition to the shovel operation a small amount of hand loading is carried on with six men. The cars are hauled to the crusher by mules where they are stored on a track beside the crusher, and their contents fed to the crusher between trains from the shovels.

The drilling operations are carried on with three No. 10 Cyclone drills which drill a 5⅝-inch

General View of Plant

Bucyrus 30-B, Jos. Hudson at the Levers

The quarry showing start of incline to crusher at left. From left to right the shovels are Model 36 Marion, 35-B Bucyrus and 30-B Bucyrus.

Bucyrus 35-B, D. J. Pickle, Operator

The New York Trap Rock Corporation's Limestone Plant at Verplank, New York

hole to five feet below the quarry floor, an average depth of 80 feet. At the time of the writer's visit a shot was being prepared on the southern face of the quarry, which required 14,000 pounds of dynamite and would supply enough rock to keep one shovel busy for about a month. We publish herewith a view of the face after the big shot was fired.

The rock is dumped from the cars to a 48-inch x 60-inch Traylor jaw crusher which is driven by a 175 H. P. motor. Over this crusher, as may be seen from one of our views, is a crane from which is suspended an air hoist for dislodging large rocks that become wedged in the hopper.

The Plant

The material is taken on a 42-inch belt with 135-foot centers to the washing screen and from there through a No. 9 Allis-Chalmers crusher. From this it is elevated to two 12-foot x 48-inch scalping screens with 1½-inch mesh. The material retained by this screen is passed through four No. 6 Allis-Chalmers crushers for further crushing. The rock that passes the mesh is taken to two sizing screens which separates into ¾-inch, ⅝-inch, 1¼-inch and 1½-inch sizes. The two smaller sizes go through together to a pan elevator and are separated in another 12-foot by 48-inch screen and then delivered to the bins. The screenings are sent to a screening plant where they are dried, the dirt removed and a ⅜-inch

After the big blast on the southern face of the quarry. 14,000 pounds of dynamite were used.

size delivered to a stock pile. The dirt taken out in the washing screen is pumped 3000 feet to a swamp with two 6-inch pumps, one Morris and one Lawrence.

The plant is electrically driven. A 300 H. P. General Electric motor supplies the power for the one No. 9 and the four No. 6 crushers. A 150 H. P. motor drives the two screens and the 42-inch elevator. The two 30-inch elevators, five conveyor belts and the small screen are driven by another 150 H. P. motor, the loading belt by a 50 H. P. crusher, and the 42-inch conveying belt by a 75 H. P. motor. Power for the air compressor is supplied by a 200 H. P. motor and various other smaller motors are used for the screening plant, the pumps and drills. The power is obtained from Newburgh.

The operation of the plant is noticeably smooth and is under the efficient guidance of Superintendent P. J. Gilcrist.

The shovels are operated by W. Batten and W. Foster.

The drying and screening plant where ¾-inch rock is obtained from the screenings. P. J. Gilcrist, Superintendent, to the left.

Verplank Point Plant

About 45 miles down the Hudson on the east side of the river, near Montrose is the Company's limestone plant at Verplank's Point. This quarry is operated by three revolving shovels, a Bucyrus 35-B on traction wheels, a Bucyrus 30-B on caterpillars and a Marion Model 36, recently acquired second-hand.

The 30-B Bucyrus has been averaging from 175 to 180 three-yard cars in 10½ hours and has loaded as high as 268 cars in that period. The 35-B Bucyrus averages about 225 cars and has loaded as high as 373 three-yard cars in 10½ hours.

The face of this quarry is 90 feet high. The drilling is done with two Cyclone well drills which drill a 5⅝-inch hole an average of 95 feet.

The stone after being blasted is loaded with the three steam shovels into 3-yard cars and hauled with mules to the incline where there is a double track each 475 feet long. Two hoisting engines haul these cars up to the crushers where they are dumped into a No. 10 Kennedy crusher.

The material is then taken up an elevator with 42-inch buckets to a 48-inch x 12-foot scalping screen. The material retained on this screen is passed through two No. 6 Allis-Chalmers crushers, from here it is elevated to a 60-inch x 20-foot finishing screen, the rejections from this screen are elevated to another No. 6 Allis-Chalmers crusher to be finished. The finished material is deposited in bins.

The stone is loaded from bins by two 24-inch conveyors, 240 feet long and one 36-inch conveyor, 148 feet long. The capacity of the loading plant is 500 cubic yards per hour. The mill is driven by a 24-inch x 48-inch Hamilton Corliss engine and the loading plant is driven by a 75 H. P. Nagle engine. The boiler plant consists of one 300 H. P. Erie City, one 250 H. P. Erie City, one

At the crusher. A 9-ton Whitcomb locomotive and a train of 5-yard Western cars delivering rock to the hopper. The air hoist is for dislodging large rocks that become jammed in the hopper.

200 H. P. Erie City, one 250 Abendroth & Root — all water tube boilers. This plant turned out over 36,000 cubic yards during the month of July and after August 1st will turn out over 40,000 cubic yards per month.

In addition to the above there is a pulverizing plant. In this plant the screenings are taken from the crushing plant and dried with a 60-foot dryer. The material is then elevated to a hexagon revolving screen where it is separated. The fines are carried by a 12-inch screw conveyor to two tube mills where they are ground. The coarse material is passed on to a No. 4 Allis-Chalmers pulverator where it is ground and then passed on to the tube mills where it is finished. From here it is carried by a 12-inch screw conveyor to tile storage bins. From these bins it is loaded in bags weighing 85 pounds by a Bates bagging machine and carried by a 30-inch belt conveyor to covered barges. This plant is turning out more than 100,000 bags every month.

This plant is under the supervision of Thos. J. Kelleher.

Clinton Point Plant

The company's largest plant is located at New Hamburg on the east side of the Hudson, 14 miles south of Poughkeepsie, almost opposite the Marlboro plant. This is also a dolomite operation. This plant has in operation six steam shovels, four of the railroad type and two small revolving, namely Bucyrus 110-C and 103-C, Atlantic 45, Marion 92 and Marion models 36 and 21. Thos. Lynch is Superintendent.

R. T. Grant is General Superintendent in charge of the three plants.

The company's offices are located at 101 Park Avenue, New York; N. D. Lancaster is President and M. D. Wadell is Vice-President.

Construction of Storage Dam for Stamford Water Company Near New Canaan, Connecticut

Exceptionally heavy work being done by small revolving shovels in hardpan and boulders. Henry Steers, Inc., Contractors. Description of complete conveying system.

FOR anyone who is curious as to how a ¾-yard revolving shovel can behave in hardpan and boulders under the hardest and most difficult conditions, a trip to New Canaan, Connecticut, will give him his fill.

Here on a little stream known as the Mill River, the well-known firm of Henry Steers, Inc., of New York, are engaged in the construction of a storage dam and reservoir for the Stamford Water Company of Stamford, for the purpose of supplying that city with water.

In order to gain a clear conception of the conditions surrounding this work a brief description of the contract is essential.

The dam is to be of concrete, with gravity section, 50 feet high and 2,000 feet long, and will contain 60,000 cubic yards of concrete and will call for the excavation of 70,000 cubic yards of excavation. The reservoir will cover about 300 acres of ground.

The excavation operations call for a cut 25 feet wide on the bottom and 30 feet deep along the base of the dam. This cut is down to bed rock and is through hardpan and boulders.

Gravel for the concrete is obtained from a borrow pit near the dam site.

The shovel equipment consists of two ¾-yard revolving shovels, a Bucyrus 14-B and a Bucyrus 20-B, both mounted on caterpillars.

The 14-B is being used at present in the gravel pit and the 20-B in the hard digging in the cut.

Shovel Operation

The digging the last-named shovel has been up against for the past seven months is among the toughest ever encountered by this seasoned firm. As we are all aware, geologists' opinion to the contrary notwithstanding, the only difference between solid rock and hardpan is mental, with all records in favor of hardpan for meanness.

Closer View of Concrete Operations

Another view of work. In the foreground may be seen the Bucyrus 20-B shovel excavating for the foundations. The shovel loads into skips which are handled by the travelling derrick with 25-foot centers, at the left. The excavated material may be seen at one side of the derrick. This later will be thrown against the completed wall by the derrick equipped with a clamshell bucket. The boulders at the right of the excavation were all handled by the 20-B.

Construction of Storage Dam, New Canaan, Connecticut, Henry Steers, Inc., Contractors

Dam in Course of Construction Showing Trestle, Travelling Derrick and Forms in Place

Placing the Concrete in the Dam

Bucyrus 20-B digging the foundation for the dam through tough hardpan and boulders. It loads the skips seen in the foreground, which are taken away by a travelling derrick with 25-foot centers shown on page 299.

Close-up at Face of Cut, Showing Character of Hardpan with Imbedded Boulders Handled by the Shovel without the Aid of Powder

Construction of Storage Dam for the Stamford Water Company Near New Canaan, Connecticut

Then stud this hardpan with boulders weighing from five to five thousand pounds each, and the reader will have some idea of what this small shovel has gone through. The digging furthermore was not all on firm level ground, as the caterpillar mounting has been obliged to undergo the wear and tear of plowing through mud and water which had accumulated in the pit, sometimes covering the caterpillars.

It has also been forced to climb in and out of cuts on grades which appear to be at least 30% and steeper.

The boulders range in size from three-quarters of a yard to two yards or more, one in particular was measured to be 4 feet x 4 feet x 5 feet approximately and two others 3½ feet x 5 feet x 5 feet, all of which the operator states were nosed out and placed to one side with the shovel. The hardpan ran on an average from six to eight feet in depth, in some places as deep as ten feet. This was, as stated, impregnated with boulders of all sizes. Test drilling had reported this to be solid rock. All of this material, this little shovel was obliged to tackle without the use of powder as the structure of the dam would not permit its use.

This work was at the start considered entirely too severe for a shovel of this size, but according to David Bonner the Superintendent, and W. J. Fitzpatrick the General Superintendent on the work, the shovel thus far, after seven months of pounding, has come through with a clean slate, as no time has been wasted and no money spent on repairs.

A Remarkable Conveying System

On the foundation excavation the material has been taken from the shovels by skips handled by traveling derricks with a gauge of 25 feet. This material is being cast to one side, but will be thrown against the back of the concrete wall of the dam when that is finished, by means of orange peel buckets handled by the derricks.

In the gravel pit the shovel loads the material through a hopper on to a 20-inch conveyor belt, 600 feet long between centers. It is then passed through a No. 6 Traylor jaw crusher and conveyed to a screen containing ¼-inch perforations.

The material passed by this screen is taken on a belt to a storage pile. The oversize is deposited nearby by another belt. Under these storage piles is a tunnel in which two 20-inch belts operate to convey the sand and stone to the mixing bin. Another 20-inch belt is used to take the cement from the storage shed to a Smith mixer, from which it is elevated by an Insley tower and conveyed by still another belt of the same size with 600-foot centers to the forms.

One of the many boulders tossed aside by the 20-B. This one measures about 5 feet x 5 feet x 3¾ feet.

This extraordinarily complete plant was designed by Mr. Harry R. Wheeler, Engineer for Henry Steers, Inc. It is safe to assume that there are few similar contracts under way today that are handled in a more modern and scientific manner.

It might be added, to make this completeness even more complete, that the contractors generate their own electricity for the many motors necessary to keep this plant in operation.

Diesel Engine Shovel Operations in an Australian Limestone Quarry

The David Mitchell Estate in Victoria Are Working at One-Eighth Previous Costs with a Revolving Shovel Driven by a Diesel Type Engine

AT Lilydale, which is some twenty-three miles from Melbourne, the David Mitchell Estate has in operation the first Diesel engine shovel to be used in Australia.

The shovel was installed in January of this year in a limestone quarry operated by this estate.

This deposit, which has a depth of 150 to 200 feet, is covered with an overburden consisting of a hard sedimentary gravel, interspersed with a considerable amount of ironstone. The shovel

was first put to work removing the crown of the hill in which this deposit lies, and has been working against a face of overburden 30 to 40 feet deep. The material when blasted with dynamite breaks up easily and presents a good average digging condition to the shovel.

The shovel loads into four-yard dump cars which at the present time are hauled by horses.

Bucyrus 30-B Diesel shovel loading four-yard cars in the pit. The cars are hauled 400 feet to the dump by horses.

This has led to so much idle time on the part of the shovel that the owners are planning to install small electric locomotives in order to permit the shovel to operate to a higher capacity.

The length of haul to the spoil area, which is located on the opposite side of the hill, is about 400 yards down a grade of 1 in 50. The shovel which is equipped with a dipper of a rated capacity of one yard fills a car to heaped measure in four swings, an estimated load of 5 cubic yards. The average output per eight-hour day with but two or three cars in service has averaged about 400 cars or 2000 cubic yards per week of five days. In spite of this the owners report that the cost of operation, including due allowances for interest, depreciation, etc., has amounted to one-eighth of the hand labor methods which were previously employed.

The shovel is also used for excavating the limestone which is previously shot down with dynamite. The rope thrust has proven highly efficient in this heavy digging.

The Diesel Engine Shovel

The shovel is a 30-B Bucyrus mounted on caterpillar traction and carries, as stated, a one-cubic-yard dipper. The power unit is a single heavy-duty Diesel-type engine, specially designed for this shovel. The thrust of the dipper is accomplished by a patented rope drive, there being no engines or machinery on the boom as is usual on the ordinary type of shovel. The machine has given splendid service and is extremely simple to handle, the operator preferring to operate it to a steam shovel. The engine, it has been noted, responds very quickly to the load, even more so in fact than a steam shovel.

Fuel Cost $3.70 Per Week

The fuel burned is an oil of .892 specific gravity, running 250 gallons to the ton. This is supplied by The Anglo-Persian Oil Company and delivered on the site for the sum of about £4.75 ($23.08). Up to the present it has been impossible to obtain accurate figures of fuel consumption, but it is estimated that the engine has been burning about 40 gallons of oil per week, at 9.2 cents per gallon, which would amount to about $3.70 per week for fuel.

Face of Quarry — the dark material is overburden which is removed by the shovel. The limestone runs 97% lime.

The limestone, which is of an exceptional quality, shows a content of 97%. The greater part of this is burnt to lime in six lime kilns. This lime is of a very high quality and commands a ready sale on the building market.

The remainder of the plant consists of the necessary hoists, air compressors and rock drills.

Incidentally, the fact may interest our readers that this property forms part of an estate which was originally held by the father of Madame Melba.

Getting three new contracts at three consecutive biddings makes us think of the story of the two Irish contractors who, to celebrate a similar event, went to New York and to the theatre. A violinist was playing. One of the sons of Erin, not versed in music of the day, turned to a highbrow lady and said, "Madam, will you tell me what the gintleman is playing?" With a haughty air the highbrow lady replied, "Go Feather Your Nest." The Irishman replied, "Go to the Divil, can't you answer a civil question."—*Juniata News.*

It's A Poor Rule, Etc.

"Johnny," said his mother, "you should not eat so much between meals. It will take away your appetite at meal time."

"Don't see why it should," replied Johnny. "My eating at meal times never takes away my appetite for eating 'tween meals." —*Boston Transcript.*

Winter Excavation Near Toronto

How Toronto Contractors Moved 150,000 Cubic Yards of Material Despite 20 Degrees Below Zero Weather

AT Swansea, a suburb of Toronto, the F. W. Scriven Construction Company of the Excelsior Life Building of that city, have completed a contract carried out entirely during the winter months, in a manner which speaks well for the energy of the contractor.

The contract called for the filling in of a piece of ground, the total area of which approximated eight acres, calling for the moving of upwards of 150,000 cubic yards. This ground consisted of a swamp and a steep hillside, the character of which rendered it useless for building purposes.

However, when the Excelsior Land Company took hold of the property, they recognized its possibilities and determined to level it and make of it a valuable subdivision. Furthermore, they appreciated the value of doing this development work during the winter months, so that they would have the summer free to developments. The result is that this land which was of no value in November was transformed into a uniform plat of about 7% grade, with an average height above Lake Ontario of about 20 feet, with a value for industrial purposes, said to be $60.00 to $80.00 per front foot.

The contract was let at the end of November, when actual freezing weather had already set in, and the first earth was moved on December 4th, with a small Erie shovel loading wagons and trucks.

Three weeks later another small shovel was added, but being dissatisfied with the progress, a third shovel was brought into action on January 1st. This last machine was a 40-R Bucyrus with a 1½-yard dipper, the property of Johnson Bros. of Brantford, Ontario. The work consisted of cutting down the hill and filling in the low land, the cuts running up to a depth of 45 feet.

By this time the Canadian winter had set in in earnest, the temperature frequently touching 20° below zero with a high wind, anything but conducive to outside construction work. The ground was frozen like rock.

Shovel operation at Swansea, Ontario, where the thermometer frequently touched 20 degees below zero. This view shows a 40-R Bucyrus which the F. W. Scriven Construction Company used for the heavy excavation.

In spite of these conditions the contractors determined that they were not going to be "frozen out" and they went after the job with stumping powder and dynamite, which they expended to the extent of over a ton.

Through January and February these operations continued and on March 2nd the Bucyrus was moved off with the heavy work disposed of. The two smaller machines finished cleaning up three weeks later, and on March 29th the F. W. Scriven Company turned over the property to the owners for subdivision work, completed except for a little blade grader work.

The engineer in charge of the work was H. P. Heywood, who represented the firm of James Proctor & Redfern, consulting engineers of Toronto.

A Texas Planter Connects His Plantation with Civilization with His Own Dragline Excavator

How Mr. P. A. Chapman of Waxahachie, Texas, Built an 8½-Mile Road Fill with His Own Gasoline Dragline Excavator in the Red River Valley

IT is not every day that we hear of a planter buying an expensive gasoline dragline excavator in order to build, at his own expense, a road connecting his plantation with the market. But this is just what P. A. Chapman of Waxahachie, Texas, has done.

His plantation lies on the Red River in the county of the same name, 20 miles northeast of Clarksville, in the extreme northeastern corner of Texas.

Part of Finished Road

It consists of 15,000 acres of excellent land in a low wooded country, thick with pine and oak. This excellent land, however, could not be exploited to Mr. Chapman's satisfaction, due to the fact that this low country was subject periodically to overflow from the Red River, isolating it effectively from communication with the outside world.

This obstacle, however, did not deter Mr. Chapman. He set out to rectify matters.

To build a road which would enable him at all times to get supplies to his farm and his produce to the market required the construction of 8½ miles of fill, tapping State Highway No. 5, between Clarksville and Texarkana, Texas. To complicate matters the ground was very boggy.

He started in by purchasing a machine that he felt was best suited for the purpose, a Bucyrus Class-9½ gasoline operated dragline excavator, mounted on caterpillars. This machine was equipped with a 45-foot boom and a 2-cubic-yard bucket, with a 60-foot boom where long reaches were necessary. Work was started on February 1, 1921.

The softness of the ground made it necessary for the machine to work at times on pontoons. These pontoons were 8 feet wide by 12 feet long, built of 3 x 12 green elm timbers firmly bolted in double thickness and tied together with a ¾-inch cable. Stumps in the right-of-way were disposed of with Dumorite.

The dragline operated two 10-hour shifts and averaged 50,000 cubic yards per month.

The ground was so soft in places that mules bogged down. Supplies and fuel were taken to the machine with oxen and mud boats, four and sometimes six oxen to a team.

Swinging a Pontoon

The road, as stated, had to be built in a fill the whole distance. This fill varied from 4 to 20 feet high, with a 20-foot crown and a 2 to 1 slope, the material being borrowed alongside.

The dragline consumed between 5 and 6 gallons of gasoline per hour. The work cost in the neighborhood of $75,000.

J. L. McAlester was superintendent in charge of the work. The dragline operators were N. L. Hargraves and L. L. Ballew, with Claude Bookout as extra.

We are indebted to Mr. McAlester for the photographs and information.

One of the fleet of mud boats drawn by oxen which were used for getting fuel and supplies to the machine. Four and sometimes six oxen were used to a boat.

In Front of the Dragline, Showing Cleared Land.

Bucyrus Class-9½ gasoline dragline excavator building a road through boggy country in Red River County, Texas, to connect P. A. Chapman's plantation with Highway No. 5. Mr. Chapman did the work.

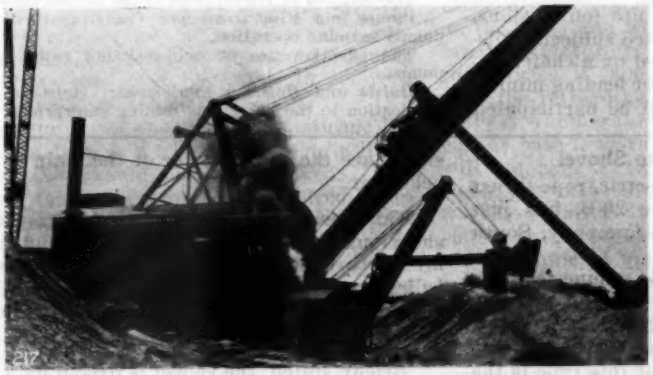
Brown & Floyd's 14-B Bucyrus on highway work along the Elk River, West Virginia. They have 10 miles of rock excavation there and have purchased a new Bucyrus 20-B to help put the job through this summer.

A Bucyrus 20-B Clamsh[illegible]stor
Gravel Along t[illegible]m R
New [illegible]ty.

The Oliver Iron Mining Company's New Bucyrus 320-B Cutting-in in Hull-Rust Pit, Hibbing, Minnesota.

...tor Handling Sand and
...ern River Docks,
...City.

There's a tough job before this small shovel, but it is wading through it. The photograph which was sent us by the operator, A. J. McKinnon, shows one of the Western States Gas & Electric Company's 30-B Bucyrus shovels at work on the El Dorado Development in the High Sierras, Placerville, California. There are two 14-B Bucyrus machines, also double-shifted on the same job. Two other 30-B's are at work at Twin Lakes on the other end of the project. Mr. McKinnon tells us that Ralph Henderson is operating his machine on the opposite shift.



The Pyramid Coal Corporation's new outfit starting operations on their property at Marion, Illinois. The shovels are a 320-B Bucyrus with a 50-B coal loader in the foreground.

The Excavating Engineer

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THE EXCAVATING ENGINEER PUBLISHING CO.
Bradlee Van Brunt, Manager and Editor
South Milwaukee, Wisconsin
Printed in the U. S. A.

An Excellent Precedent

Those who are responsible for the management of The American Mining Congress, which will hold its annual convention and exposition in Milwaukee from the 24th to 29th of this month, are establishing an excellent precedent which we believe, if properly appreciated by the operators and practical men, will result in an immense amount of mutual benefit. Two afternoons are to be set aside for the informal discussion of the practical problems that face every mining official.

We hope that the introduction of this so-called "Open Forum" into the program of this convention will be given the co-operation it deserves by the mining men.

This Forum will be divided into ten sessions, each devoted to one or more related subjects. Discussion in each session will be led by a chairman, selected from the editorial staff of leading mining and technical journals, and will be participated in by the operating men in attendance and representatives of manufacturers.

A conception of the practical character of the subjects to be discussed can be gained by the following summary of the program, which is scheduled for Tuesday and Wednesday, September 25 and 26.

Rock Drills: Churn drills vs. air drills for open pit work.

Explosives: Means of securing co-operation from the miner in using explosives that will produce maximum amount of lump coal.

Disadvantages of using small diameter dynamite cartridges.

Mine Transportation: Track equipment — advantages of standardized track gauges and standardized frog switches and turnouts.

Modern mine cars — their design and effective use. Effective lubrication of mine cars.

When and where to use gasoline, trolley and electric storage battery locomotives.

Roller bearings and plain bearings and other types of axles in mine cars and locomotives.

Shoveling and Loading Machines: Advantages and limitations of the caterpillar-mounted shovel.

What are the principal requirements to consider in the selection of underground loading and mucking machines? And what are their limitations?

Safety Appliances: What can be done to further the development and introduction of safe equipment for hoists, pumps and loading machines in gaseous mines?

Mine ventilation and its application to various mine conditions.

Crushing, Screening and Separating: What is the field for magnetic separators?

Can manufacturers of crushers and screens work together more fully for the advantage of the mine operator?

Power Transmission: The history of power transmission.

Underground Power Equipment and Transmission: A. C. vs. D. C. current in mine operations from the standpoint of efficiency and safety.

The relation of feeder lines to the return current.

Pumps and Mine Drainage: Centrifugal vs. plunger pumps in mine operation.

The effective use of acid-resisting metal in mine pumps.

Hoists and Hoisting Equipment: Hoists and their application to the particular mining enterprises.

A New ¾-Yard Gasoline Shovel

A new ¾-yard gasoline or electric, rope-thrust revolving shovel, known as the 20-B, has just been announced by the Bucyrus Company, South Milwaukee, Wisconsin.

This shovel contains the same unique features which are embodied in their 30-B gasoline machine which has been on the market for the past year.

Like the 30-B, the feature which makes this machine unique among shovels of this type is the ingenious rope-thrust arrangement, patents on which are held by the Bucyrus Company, which not only does away with the necessity of engines, gears, clutches, chains or complicated shafting on the boom, but at the same time gives this shovel a drive behind the thrust more powerful than it is possible to obtain with a steam shovel of the same size, since the whole power of the main engine is behind it.

This device has proved itself on the 30-B shovel under the toughest digging conditions in all parts of the world, and its manufacturers believe that it has literally created in itself a new era for the small shovel, driven by an internal combustion engine or electric motor.

Briefly stated, the shovel is driven by a single, rugged, slow-speed gasoline engine or electric motor as the case may be. The motions of the dipper handle are controlled by a small drum on a shaft under the boom, which shaft has keyed to it pinions for engaging with the racks on the handle. The drum is turned either way by two ropes wound around this drum in opposite direc-

tions, both ropes leading to drums in the main machinery.

The striking fact about the performance of this shovel is the ease with which the operator can control the motions of the dipper, even to shake it to relieve it of sticky material.

Bucyrus 20-B ¾-yard Gasoline Shovel

This shovel may also be had with high lift or extra high lift booms, or with dragline, clamshell excavator or crane attachments.

The control is exceedingly simple, and the machinery arranged with convenience of the operator in mind. Whatever clutches are necessary are sufficiently large to obviate the danger of burning. The caterpillars and frame in general

Bucyrus 20-B Gasoline Dragline Excavator

are the same as the 20-B steam machine, which is well known for its unusual strength and ruggedness.

An illustrated bulletin describing this new machine may be obtained by writing the Bucyrus Company, South Milwaukee, Wisconsin, and asking for Bulletin F-201-S.

· FIELD NOTES ·

Points on Care of Truck Tires

Among the items of cost which enter into the excavating engineer's use of motor truck equipment, including all fixed charges and running expense, it has been said that fully 15 per cent of the total lies in the expense of tires.

In the interests of prolonging the mileage life of truck tires, it is well to consider certain items of attention that should not be overlooked.

Not one truck operator in a hundred takes into consideration the terrific strain placed upon pneumatic tires when the truck is traveling at high speeds over ordinary roads. In fact, to some it is mysterious that a tire may sometimes blow out while standing still or else give way when running over a glassy smooth pavement. The fact is that such occurrences are the result of a stone bruise caused by the terrific impact of a tire striking a stone imbedded in the road while going at a high rate of speed. High speed over rough roads is perhaps the greatest source of injury to truck tires.

Most important in the care of the pneumatic tire is the almost daily habit of keeping the tread uncut and unbroken. As fast as they occur, all cuts should be mended, so that water, sand and other destructive matter may not gain a start on the tread and wear it away faster than calculated, prematurely. If the tire is worn down to the carcass, it should be taken to a reliable concern for retreading. Men who are trustworthy will say whether this operation is justified. If the canvas base is worn through in spots, retreading will not help it. An inner liner will give additional life to the tire, but not for long.

The replacement of solid tires when necessary should not be neglected. A great deal of damage may be inflicted upon the vehicle when the tires have been worn to a point where they have very little cushioning quality. Ordinarily, a solid tire should be replaced when it has been worn down to within an inch of the steel base. It must be remembered also that the condition of the rubber in a solid tire has a great effect upon the tire's resiliency, and that even though it may be two or three inches in thickness, it may need replacement.

Other items of importance to proper treatment of truck tires may be summarized as follows:

1. Don't overload. Overloading stresses the tires beyond their elastic limit, destroying the

life of the rubber and the durability and cushioning quality of the tires.

2. Don't overspeed. Excess speed magnifies the impact of the tires on road bumps and causes overheating.

3. Don't run in car tracks, as this cuts the tires by centering the pressure at one point instead of evenly over the tread. The edges of the rails, particularly the guard flanges of street car tracks, are very sharp and running rubber tires over them is much like running them over the edges of steel knives.

4. Don't spin the wheels or permit them to run out of line on account of a bent axle. Many drivers speed up their engines under the erroneous impression that this will increase traction.

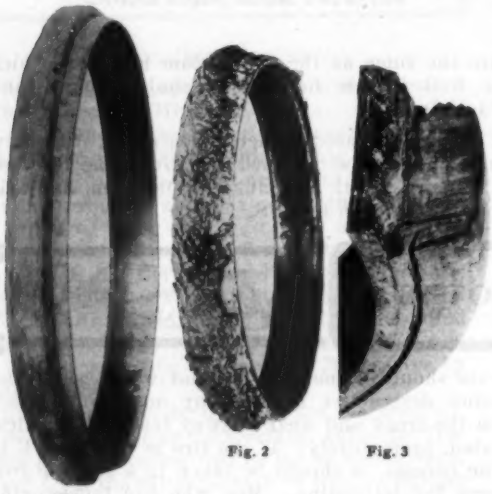


Fig. 1 Fig. 2 Fig. 3

Fig. 1 — Shows the effect of running in car tracks. The damage is done by centering the pressure at one point.

Fig. 2 — Overspeeding causes immature wear. Here is the effect.

Fig. 3 — This is the result of overloading, which compresses the tires beyond their elastic limit, destroying the life of the tires and the cushioning qualities of the rubber.

The slower a wheel turns, the better traction it has. The more gently it is turned, the less liable it is to slip.

5. Avoid skidding. In applying the brakes, the wheels should not slide. Not only does sliding the wheels injure the tires, but it reduces the braking effect. Quicker action is secured when the wheels barely turn and the abrasion on the tires is least. Don't turn corners at such a speed that the wheels skid, and don't bring truck to a stop by sliding the wheels.

6. Slivers on solid tires should be promptly cut off entirely as soon as they appear. If the sliver is left on, it will contribute nothing to the strength of the tire, but will continue to flap and the tear will extend until half the tread is torn loose.

7. Most anti-skid devices are very hard on tires. Don't use them unless it is absolutely necessary, and then be sure they are correctly applied.

Fig. 1 Fig. 2 Fig. 3

Fig. 1 — This shows the result of neglecting to give the proper attention to cuts, slivers and hangnails. Slivers should be promptly cut off as soon as they appear.

Fig. 2 — Skidding and sliding is responsible for the condition shown here. Uneven wear of the tire in spots is the first symptom of this difficulty.

Fig. 3 — The tire in this picture shows the effect of spinning the wheels. Poor alignment will have a similar effect.

8. Bad roads are obviously injurious to tires. On a road with a rough surface, the tire rests successively on irregularities, which have the effect of overloading that particular portion of the tire.

9. To avoid unnecessary strain on pneumatics or flat spots on solids, lift the truck weight from the tires by raising on jacks when the truck is to be idle any considerable length of time.

10. With pneumatic tires it is important to know your inflation pressure. Proper inflation pressure is as necessary as proper loads and speeds.

WANTED

Individual or firm with capital and experience to start gravel company. Writer is owner of a large gravel pit (between 1 and 2 million cubic yards) located one mile from city of 10,000. No local competition. Address V. L. R., Box 422, Albert Lea, Minnesota.

DEVICES YOU OUGHT TO KNOW ABOUT

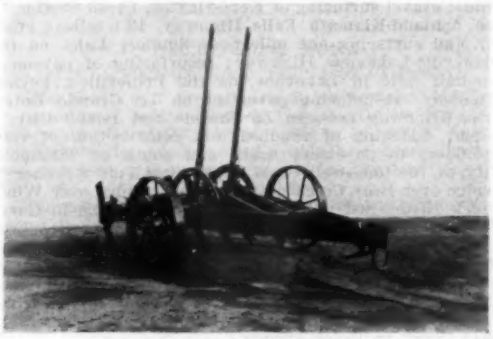
Lakewood Engineering Co. Announces New Paving Equipment

The Lakewood Engineering Company has recently announced two new units of paving equipment, photographs of which are reproduced below.

The Lakewood Graderooter is a new piece of paving equipment brought out this season, and has already attracted considerable attention. It has been found particularly useful in scarifying subgrade preliminary to mechanical subgrading. It is used also for practically all of the scarifying work found on the average road job, and is heavily built to stand up under severe service.

Some contractors are using this in place of a rooter plow. It is also being used for maintenance work by state as well as county highway departments.

The Graderooter is furnished with two sets of five teeth each, and one special manganese tooth



The Lakewood Graderooter

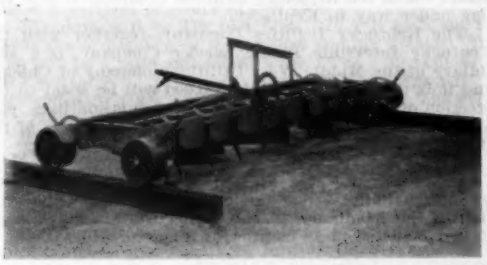
alone for particularly heavy work. Machine weighs about 1300 pounds and can be furnished for tractor or team hitch.

Another new unit of paving equipment introduced this year by the same company, which is meeting with general approval of contractors, is the Lakewood Steel Subgrader.

The Steel Subgrader is a development of the Lakewood wood frame subgrader, which has been used for the past several years and has proved of such advantage to both contractors and engineers that mechanical subgrading is rapidly becoming the standard method.

The Steel Subgrader has been developed to meet the demand for a heavier unit, and one which could be equipped with scarifying teeth on the front member to assist in breaking up the subgrade ahead of the blades. The wood frame subgrader will still be furnished, but the steel tool will be supplied to contractors desiring a stronger and heavier machine.

The purpose of the subgrader is to plane the subgrade to the exact depth for the road slab. It travels on the side forms and is pulled by a roller or tractor. Steel cutting blades, which can be adjusted so as to take very fine cuts, trim the subgrade to exactly the depth desired.



The Lakewood Subgrader

The machine will cut to either a flat or crowned subgrade and can also be adapted for the new Illinois design of subgrade, which provides for a slab considerably thicker at the edges than at the middle. A turntable pedestal allows the machine to be raised off of the forms and turned in the middle of the road to allow the roller or trucks to pass.

Further information concerning the above equipment may be obtained from the Lakewood Engineering Company, Cleveland, Ohio, or by writing to the Excavating Engineer.

Evinrude Pump Saves Fire-Threatened Town

Reports recently appeared in the Duluth daily papers telling how the little town of Central Lakes, Minnesota, was saved from fire by the use of an Evinrude Centrifugal pump. Forest fires had been threatening this village of 150 inhabitants for some time but by consistent backfiring it had been saved. Upon this occasion a saw mill outfit had just been burned out and the fire was moving toward the main section of the village. The Evinrude pump was brought through three miles of flaming roadway by two National Guardsmen. It was lowered into a cistern under the parlor floor of one of the Central Lakes homes and the stream of water which it threw on the fire, together with the efforts of a bucket brigade, succeeded in halting the progress of the flames.

SHOTS FROM THE · FIRING LINE ·

Central States Notes

BY M. J. WOODHULL AND MARK GAYLORD

A large electric power plant which will cost several million dollars will be built just east of Jeffersonville, Kentucky, on the Ohio River in the near future by the Interstate Public Service Company. According to a recent announcement by Harry Reid, President of the Company, this plant will supply light and power to Southern Indiana. The tract of land purchased by this company consists of one hundred five acres following the Utica Pike, extending a mile and a half down the river front. Tentative plans call for the tying in of this proposed plant with important hydro and steam electric plants which the Kentucky Utilities Company is now getting under way in Kentucky.

The Kentucky Utilities Company, together with the Kentucky Interstate Public Service Company, is a subsidiary of the Middle West Utilities Company of Chicago and it is understood that $10,000,000 will be spent in the erection of a big power plant and transmission lines, etc., and will furnish power and lights for a large part of the Blue Grass State.

The Chicago Union Station has awarded a contract to John Griffiths & Son Company, Chicago, for the erection of the headhouse of the Union Station at Chicago, to be completed in 18 months, at a cost of $10,000,000.

The Detroit & Mackinac has been authorized by the Interstate Commerce Commission to construct a 12-mile extension from its Avery Branch at Alpena, Michigan, to Rockport.

The Detroit Connecting Railway has applied to the Interstate Commerce Commission for authority to construct and operate a line 85 miles in length from Delray (Detroit), Michigan, to Marine City. The projected line would run through Ecorse, Pontiac, Sylvan Lake Village and Mt. Clemens.

The Elgin, Joliet & Eastern is calling for bids for the construction of a new one-story car repair shop at East Joliet, Illinois, and will construct a new car repair shop at Joliet, Illinois, to replace the building recently destroyed by fire, the new structure to be 300 feet by 500 feet and to cost approximately $500,000.

Martin & Hart of Evansville have purchased a Bucyrus 20-B High Lift for highway work. They have a 40,000-yard rock job near Leavenworth, Indiana. After investigating other makes carefully they decided on a 20-B as the one to stand the hard going they were up against.

The States Corporation now have their 88-C and 103-C mounted on caterpillars. These caterpillars are causing considerable comment as there are a number of shovels in this section of the country now but these are the first on this mounting.

The Fugate Construction Co. are just finishing up a six-mile highway job on Pidgeon Creek, West Virginia, near Matewan.

They hit some pretty heavy rock work but their old 14-B handled it in such a way that the highway engineers are very complimentary in their comments on the way the job was done.

This is a section of the State Highway running from Williamson to Logan.

O. E. Sawyer and "Bob" Fugate recently made a steam ram for the Fugate Construction Company's 14-B that is novel to say the least. They took a steam cylinder and piston from an old steam pump and coupled it up to the hand ram mechanism. Then they tapped the throttle casting for a steam pipe so that the ram gets steam as soon as the throttle is opened the least bit. It gives them a three-lever control and does away with the hand ram. — And the damn thing works.

Northwestern States Notes

BY A. R. HANCE, PORTLAND, OREGON

Four contractors submitted bids for improving Mt. Hood Loop, National Forest Road, Government Camp Surfacing Section, located within or partly within Oregon National Forest, in the counties of Clackamas and Hood River. Elliott, Scroggins & Pacquiet of Portland were the low bidders. The figures were sent to Washington with the recommendation that the work be awarded to the low bidder.

Bids for the construction of approximately 38 miles of road and a number of bridges have been considered by the Oregon State Highway Commission which met in Portland on the 30th of July. The several projects for which bids were received are as follows: Graveling Albany-Corvallis Section of Pacific Highway, 9.5 miles; graveling Pacific Highway between Cottage Grove and bridge over the coast fork of the Willamette River, 9 miles; gravel surfacing of Keno-Hayden Creek Section of the Ashland-Klamath Falls Highway, 12.4 miles; grading and surfacing one mile near Summer Lake, on the Prineville-Lakeview Highway; resurfacing of pavement one-half mile in Lakeview, on the Prineville-Lakeview Highway; resurfacing pavement on La Grande Enterprise Highway between La Grande and Island City, 2 miles; widening of roadbed and construction of rock shoulders to pavement north and south of Tillamook City, on the Roosevelt Coast Highway, 4.5 miles; concrete bridge over Bear Creek near Svenson; bridge over Windchuck River, just north of the California line in Curry County; bridge over Lost Creek, near Prospect, on the Crater Lake Road; new pier for the existing bridge over the Willamette River at Newberg; reconstruction of bridge near Hebo and one near Neskowin, in Tillamook County; combined crossing of the Grand Ronde River and the Oregon-Washington Railroad & Navigation tracks near Perry, in Union County.

The Triangle Construction Company of Spokane, Washington, has been awarded a contract by the United States Bureau of Public Roads for placing a nine-inch gravel surface on the Coeur d'Alene Highway from Cataldo, 11.36 miles west, on a bid of $2.70 a yard, totaling approximately $59,000.

Doust, De Camp & Dare, also of Spokane, have been awarded the contract for replacing a nine-inch crushed rock surface on the same road from Bennett's Bay, 11.13 miles east.

Preliminary work on the camp buildings for housing some of the laborers and equipment that will be used on the McKay Creek Dam has already started, and more men will be added to the force as it becomes possible to use them, according to R. M. Conner, Construction Engineer of the job.

A minimum of three years will be required to build the dam, which will form a reservoir having a storage capacity of 73,000 feet. The cost will be $2,500,000. Materials used in building the structure will include 2,300,000 cubic yards of gravel and 25,000 yards of cement. The site of the dam is about eight miles south of Pendleton, between high bluffs on McKay Creek.

UMI

Approximately $50,000,000 is being expended annually for public road work in the eleven Western states having representation in the Western Association of State Highway Officials, according to Dr. L. I. Hughes, of San Francisco, Deputy Chief Engineer of the United States Bureau of Public Roads.

Draft of specifications for bids on the Lolo Pass Seven-mile Road Project, Montana-Hot Springs-State line Section, has been prepared by officials in the United States Bureau of Public Roads office at Missoula, Montana, and bids were opened on July 24th. The clearing contract for this section of the forest road project was let last September to Buck Helean, contractor of Missoula.

A contract for the building of 23 miles of standard gauge logging railroad north of Hayden Lake into the Burnt Cabin District, has been awarded to R. A. Biggs, Construction Engineer of Spokane, by the Ohio Match Company, at Spokane recently. The amount of the contract is understood to be in excess of $400,000 with an average construction cost per mile of more than $17,000. In addition to this, the rolling stock will make it practically a half-million-dollar investment.

Fifty men are already on the job and a force of between 300 and 400 men will be employed as soon as the details have been worked out. Work will be undertaken from both ends and from three intermediate construction camps along the line. It is expected that the first 17 to 19 miles will be completed by the first of December. The remaining trackage will be laid in the spring.

Pacific Coast Notes

BY P. H. BIRCKHEAD, SAN FRANCISCO, CALIFORNIA

The South San Joaquin Irrigation District, Manteca, is planning to hold a bond election shortly to vote bonds in amount of $500,000, the proceeds to be used to finance the construction of additional canals, line existing canals, and purchase new pumping plants for the District.

Plans are being prepared by the Pan-American Petroleum Co., Security Building, Los Angeles, for the construction of storage tanks to store 400,000 barrels, and a loading plant to handle about 20,000 barrels per hour. Also a pipe line to the refinery at Watson Station.

Plans have been completed by the Engineering Depart- of the Union Pacific Railway Co., 610 South Main Street, Los Angeles, for the construction of the Union Pacific Cut-off from Signal Hill to Terminal Island, about 3 miles in length, estimated cost $600,000.00.

The State of California will add $227,000, as soon as funds are available to the money already appropriated by Los Angeles County and the Forest Service for the construction of the Arroyo Seco-Pine Flats-Azusa Forest Road, representatives of the Highway Commission declared at a conference with the Board of Supervisors, the Automobile Club of Southern California, and the Forest Service at Los Angeles.

The proposed road will be 75 miles long and will cost in the neighborhood of $1,000,000.00. The Forest Service has built a stretch of approximately 10 miles on the northern end of the project, up the San Gabriel Canyon, and the Forest Service and Los Angeles County have built about 5 miles on the southern end, up the Arroyo Seco.

A preliminary survey for the road is now being made by a Forest Service party and it is hoped that convict labor may be employed on the project this fall.

Contract has been awarded to C. Miles, 26 King Street, Santa Cruz, for the construction of an earth fill dam in Plumas County, involving 40,000 cubic yards of earthwork for the Engels Copper Mining Company, Mills Building, San Francisco.

Contract has been awarded to Fredrickson & Shannon, Cory Building, Fresno, at about $13,000 for 33-inch, 30-inch and 27-inch concrete sewer on S Street work to be done under bond issue.

Ground was broken on July 23rd at the east portal of the Pacific Gas and Electric Company's 20,000-foot tunnel that is to be a part of the diversion canal from the Pit River to Pit No. 3 Power House. The tunnel is really two separate tunnels, cutting through two mountain ridges but the two tunnels are to be cemented together and made one.

This will be a pressure tunnel. It will be essentially a part of the pen stock delivery water at the power house under a vertical pressure of 300 feet.

The dam will be 110 feet high. It will back up Pit River for a distance of nine miles, making a lake. The lake will be a mile and a half wide. The dam is close to Peck's Bridge on the county road. This bridge will be submerged by sixty or seventy feet of water. The crest of the dam will serve as a bridge for the county road.

Rails are laid on the railroad from Cayton to within four miles of the dam site. The roadbed is graded to the dam site.

Plans of the Excelsior Water and Power Co., to build a huge dam at Scott's Flat on Deer Creek, about seven miles east of Nevada City in Nevada County, in connection with a project under which the irrigation of 250,000 acres of land in Nevada and Yuba Counties is contemplated, will be carried forward with all possible haste as the result of the granting of the necessary permit last week by the division of water rights of the State Department of Public Works. This was announced by W. G. Allen, General Manager of the Excelsior Company.

He said the impounding barrier will cost approximately $500,000, and when completed will create a reservoir with a capacity of approximately 60,000 acre-feet. The permit gives the company the right to appropriate the flood waters of Deer Creek.

Under the initial state of development, which is expected to be completed in 1924, Mr. Allen said the dam would be 110 feet high, and about 1000 feet long. Later on it is proposed by the company to raise the height of the dam to 145 feet.

According to Mr. Allen, the Scott's Flat Dam will be used exclusively for irrigation, as it is said to be the first unit in a program of irrigation and hydro-electric power development by the Excelsior Company which will cost $27,000,000. The Excelsior Company is a closed corporation and is practically owned outright by the Ayer Estate of Massachusetts.

Contract has been awarded to the Utah Construction Co., Phelan Building, San Francisco, and Boise, Idaho, who bid about $5,094,000 for the construction of 98 miles of railroad between Rogerson, Idaho, and Wells, Nevada, for the Oregon Short Line Railroad. The new line will connect with the Southern Pacific and Western Pacific systems at Wells, Nevada.

Bonds have been voted by the City of South Pasadena in amount of $200,000 to purchase rights to 40 acres in the northerly section of San Gabriel and do the following work: 3 miles of pipe line; drill one well; install two booster pumps; construct 6,000,000-gallon reservoir.

Contract has been awarded to A. J. and J. L. Fairbanks, 625 Market Street, San Francisco, who bid $64,083.00 for grading 7.34 miles of highway between Monticello and Devils Gate, California.

Bonds have been voted by the City of Beverly Hills, Los Angeles County, in amount of $400,000 for a municipal water system consisting of reservoirs, tanks, distributing lines, pumping plants, etc.

Permit has been granted by the State Division of Water Rights, Sacramento, to the Electro Metals Company, Call Building, San Francisco, for the appropriation and storage of water at Ishi Pishi Falls on the Klamath River, to be used for an extensive power and mining program. The project will include the construction of a large concrete dam, tunnels, and a power house. Sanderson & Porter, Nevada Bank Building, San Francisco, are consulting engineers.

It is proposed to construct electric smelters and refineries at Trinidad later, using the power developed as above for manufacturing purposes. About 150,000 H. P. will eventually be developed. Total estimated cost approximately $20,000,000.

The formation of the proposed Kern River Water Storage District at Bakersfield has been approved by State Engineer W. F. McClure, and an election to vote on forming the district and to elect directors will be held within 60 days. The District will include about 292,000 acres of land. A large storage dam will be constructed at a cost of about $4,000,000, also a power house, canals, pumping plants, etc. Total estimated cost of proposed construction work is about $20,000,000.

Southern States Notes

BY C. N. BALLENTINE, W. W. WHORLEY AND H. E. GREEN

Bauman & White, Maynor, Georgia, were awarded a nice road job in Ware County, Georgia, on August 3rd.

Phillips & Company have commenced grading operations on their section of the new Gadsden Highway in St. Clair County. The Phillips Brothers, Warner and Jack, are well known throughout the South, having been engaged in railroad and highway construction for a period of years. They have recently installed a 20-B Shovel to handle the grading. This machine is being set up by Mr. Moeller, Bucyrus erecting engineer, and will be operated by Mr. George Stanberry.

Mr. F. E. Bosley, who has been operating a shovel for the Kershaw Mining Company, was a recent caller at this office.

R. D. Chambers of West Point, Georgia, states that he is making the dirt fly on the Hall County work in Georgia.

Vader Roberts is moving dirt and loading stone with a 20-B for the W. T. Taylor Construction Company.

Stanley & Singer, who were recently awarded contract for the construction of a 23-mile stretch of the Bankhead Highway in Walker County, have established an office in Jasper and are beginning operations. This is a stretch of highway which is very much needed in this section, and we feel certain that the above company will be able to put the job through in good shape in the least possible time.

Bids were opened August 11th, at the State Highway Department, Nashville, Tennessee, on approximately 50 miles of highway construction.

Sumner County — Bridge across Drake's Creek, 145 feet, awarded to the Clayton Paving Company of Nashville on a bid of $18,624.39.

Project No. 89, Rutherford County — Reinforced concrete seven-span bridge across Stone's River, awarded to Clayton Paving Company at Nashville, on a bid of $27,001.05.

The many friends of Allen J. Krebs, Sr., will be surprised and grieved to learn of his sudden death after a short period of illness on Saturday, August 11th. Mr. Krebs was widely known throughout this section of the country and made many friends. Mr. Krebs was sixty years of age and resided in Birmingham a number of years where he has done a large business as a contractor. For the past several years he has followed this line of work in Atlanta, Georgia, under the firm name of A. J. Krebs Company. He was a graduate of the A. & M. College of Mississippi and a member of the Capitol City Club of Atlanta and the Country Club of Birmingham. Interment was held in Elmwood Cementery, Birmingham, Monday morning, August 13th, after services at St. Paul Catholic Church.

The Louisville & Nashville has awarded a contract to the Nichols Contracting Company, Atlanta, Georgia, for the grading and masonry construction for 16 miles of second track from Baileys, Kentucky, to Walls End. This company also contemplates the extension of the second track construction from Walls End to Harlan, a distance of approximately 39 miles. The cost of this work is estimated at $3,500,000.

The Fort Myers Southern has been authorized by the Interstate Commerce Commission to construct a 22-mile line from a point near Fort Myers, Florida, to a point near Bonita Springs. The company's stock is owned by the Atlantic Coast Line.

Grasser Contracting Company of New Orleans, Louisiana, are operating a Bucyrus Class-24 Dragline at Anchor, Louisiana, on Government levee work. W. J. Dugas is in charge. Ford Robbillard is pulling the levers, Julies Labatut furnishing the steam and John Villere doing the lubricating.

W. J. Dugas, Superintendent for Grasser Contracting Company at Anchor, Louisiana, had the misfortune to break both bones in his right arm while cranking his Ford, Tuesday, July 31st. Last reports are that he is getting along as well as could be expected.

Louis Gooden, night operator on Grasser Contracting Company's Class-24 Dragline, has been laid up in hospital at Baton Rouge, Louisiana, with appendicitis. He was operated on and is getting along in good shape. He expects to leave the hospital in a short time.

H. H. Wilson of Winston & Co., Harrisburg, Pennsylvania, member of the National Contractors Association Board of Directors, made a speech before the Little Rock Contractors Association, Friday night, July 27th. Mr. Wilson is making a trip through the states looking over the contracting associations, and at the same time trying to get back his health. Winston & Company are one of the most successful contractors in the country.

St. Louis Items

BY A. B. KOENIG

J. F. "Dutch" Iftner of the Walsh Construction Co. is now located with them at Sidney, Ohio, on their Big Four job. L. W. Feeney is taking his place at Mattoon, Illinois, in charge of the Illinois Central work.

The J. W. McMurry Contracting Co. of Kansas City are receiving congratulations over a couple of new bosses that arrived there last month. Kennett Jim Byrne, a son born to J. W. McMurry's daughter, Mrs. Byrne, on July 29th, and George John Faubion, a new arrival at Roger P. Faubion's house on July 19th. Old Grandpa McMurry is the proudest and happiest man in the United States today. Sorry old man Volstead put it over on us so early. How about it Mac?

Keating Bros. got in on two sections of road work at the recent letting at Springfield, Illinois, about 90,000 yards of grading near Carmi, Illinois. They are moving their team outfit from West Frankfort on to it.

Woods Brothers Construction Co. were awarded riprap contract by the St. Francis Levee Board near Caruthersville, Missouri. This firm was also awarded a contract by the Mobile & Ohio Railroad riprapping their line near Wickliffe, Kentucky. W. E. Bilhorn is taking care of their interests in this part of the country.

R. F. Haupt who is in charge of the Cameron, Joyce & Co. road work at Heyworth, Illinois, reports making a good start and going to finish this job in record time.

J. J. Jobst, Peoria, Illinois, wants to sublet about 24,000 yards of grading on State Highway between Breese and Carlyle, Illinois. He also has 350 yards of concrete on this same job to sublet.

Utah

BY H. N. STEINBARGER

July production of the Utah Copper Co., Bingham Canyon, is reported to be within 4,000 tons of the peak output during the war period. The company is now said to be producing at the average rate of 550 cars of ore daily, or 44,000 tons per day and 308,000 per week.

Canada

Toronto and Vicinity

BY C. E. ENGLAND AND N. DE WIND

F. F. Fry, Limited, Scott Street, Toronto, Ontario, have secured several extensive sewer contracts recently in Toronto and vicinity.

Randolph Macdonald & Co., Limited, Toronto, have increased their activities on heavy grading near Inglewood, Ontario, and recently added some additional Western equipment to their plant.

W. E. Taylor, 22 Falcon Street, has been awarded a considerable sewer contract on the west side of the city.

York Township (Toronto) have embarked on considerable grading and sewer work recently. Their Chief Engineer, Mr. F. E. Goedike, is ably assisted in the supervision of this work by Mr. Hawtrey, Superintendent.

Hamilton Harbor Commissioners have decided to start work on the widening and deepening of the channel at Burlington Beach, Hamilton, Ontario. It is understood that this will ultimately be 300 feet wide, with a maximum depth of 30 feet.

Lichty Bros., Wellesley, Ontario, have recently secured several culvert and paving contracts, notably two at Ayr, Ontario.

Britnell Contracting Co., Ltd., of Toronto, Ontario, have secured an extensive grading and paving contract at Dunnsville, Ontario. Mr. Geo. Newberry is actively in charge of their field work.

Cameron Bros. & Hutt are busy on their contract at Delhi, Ontario. Mr. Cameron was a recent visitor at our Toronto office.

Scriven Construction Co., Ltd., Toronto, have one of their steam shovels working on the approaches of the new bridge on Bloor Street, on the west side of Toronto, for Johnson Bros. of Brantford, the general contractors for the bridge.

Curran & Briggs of Toronto are making good progress with their grading near Walkerton, Ontario. Mr. D. F. Dewar has general supervision of the work.

We recently had the pleasure of talking to Mr. Jas. Beatty of Morrow & Beatty, when in Toronto, Ontario, on a visit. He reports satisfactory progress on their big water power dam contract at Quinze River for the Northern Canada Power Co., where 20,000 H. P. will be developed.

Messrs. Kerry & Chace,, Consulting Engineers to the Hollinger Consolidated Gold Mines, announce that the general contract for hydro-electric dam construction has been awarded to Sir Wm. Arrol & Co., Ltd., the famous firm of Scotch Engineers who built the Forth Bridge and many other important international works. We understand that the work has already been started, as we go to press.

We recently had the pleasure of inspecting the plant of the Warren Bituminous Paving Co., which is set up at Queensville, alongside the electric railway station. They seem to be making excellent progress on their road work there.

We also had the pleasure of visiting the work of the Dufferin Construction Co., Ltd., on their big 20-mile road paving job through Dundas Mountain. We mentioned this work last year, when they were excavating rock right through the mountain for the building of the road foundation. Before snow flies this year it is expected that a beautiful 20-foot pavement will carry traffic over the mountain, and it is expected that this route will relieve the now over-taxed Toronto and Hamilton Highway of a considerable percentage of its traffic.

The Canadian Engineering & Constructing Co., Ltd., of Hamilton, Ontario, are carrying out extensive grading on the provincial Highway near Chatsworth, Ontario. We recently had the pleasure of inspecting their work which is under the general supervision of their courteous vice-president, Mr. F. W. Paulin.

Montreal and Vicinity

BY J. M. WARD

The City of Sherbrooke, Quebec, is going to erect a power dam at a cost of $20,000.

Messrs. Angus & Taylor, Limited, who are building the Canadian Pacific Railroad Temiskaming line from Mattawa north to Ville Marie are making good progress, and it is expected that trains will be running over the line in November next.

The Canadian Pacific Railway is working in conjunction with the Quebec Province regarding the extension of their line at Temiskaming to tap the new Gold Region in the Rouyn District.

The Ottawa River Power Company of Hull, Quebec, has taken over the Ottawa & Hull Power Company and proposes to extend the power facilities by developing another 50,000 H. P.

The Southern Canada Power Company of Montreal which operates around Drummondville District is about to let contracts for another 50,000 to 60,000 H. P. development.

Tenders have been received by the Canadian National Railways for a five-mile line in New Brunswick.

The Province of Quebec has already awarded contracts and arranged for expenditure of seven million

dollars on their highway work this year. A few more contracts remain to be let. The greater proportion of these roads are gravel construction.

The Quebec Development Company of St. Joseph d'Alma are just about making a good start since the completion of their railroad, which permitted bringing in their heavy plant and supplies.

The Canadian Dredging Company have been awarded $250,000 worth of dredging work at Midland, Ontario, and the Acadia Construction Company $80,000 at Lunenburg, Ontario.

Winnipeg and Vicinity

BY F. X. AMOSS

It is reported that the Northern Construction Company of Winnipeg has received contracts for the construction of 1200 miles of railroad in China, envolving an expenditure of twenty million dollars, and that local officials expect to go to the Orient shortly to take charge of the work.

The Canadian Pacific Railway have let the contract for the construction of the grade between Tuffnell and Tisdale to Grant Smith & McDonnell. The Western Construction Company of North Battleford have secured a large subcontract from the general contractors.

The Fegles Construction Company, Ltd., of Fort William have been awarded the contract for erecting the new addition to the Tiffin elevator at Midland, Ontario, to be completed in time for this year's crop.

Mr. H. Braden, contractor of Port Arthur, Ontario, has moved to Orillia, Ontario.

Messrs. Phesey & Batson, Limited, of Edmonton, have secured general contract for the erection of the Garneau School.

Messrs. Strickland Bros. of Shaunavon, Saskatchewan, have commenced the erection of fire hall and other municipal buildings at Gull Lake, Saskatchewan.

The Poole Construction Company of Regina are general contractors for the $53,000 addition to the college there.

Messrs. Hazelton & Walin of Winnipeg have started work on their contract for the addition to the Nurses' Home in the west end of the city.

The Gardnier Construction Company of Welland, Ontario, have secured the contract for the $350,000 beef packing plant at North Battleford.

A campaign has been started to raise $15,000 in Winnipeg to complete the Winnipeg-Emerson Highway.

Gibbs Bros. of Lumsden, Saskatchewan, have secured the contract for the construction of 17½ miles of Provincial Highway between Regina and Pense.

The Dominion Tar & Chemical Co., Ltd., of Montreal, will erect a plant here next year for the manufacture of fine tar and tar products, the plant to be ready for operation by January 1, 1925.

TRADE NOTES

The Ginsberg-Penn Company, Inc., 50 Church Street, New York, sales representatives for construction machinery, have recently been appointed, effective August 1st, by the Byers Machine Company, Ravenna, Ohio, to take on exclusive distribution of their entire line of locomotive, auto and truckranes.

The Raymond Concrete Pile Company announce the opening of a Pacific Coast office in the Washington Building, Los Angeles, California. Mr. O. C. Struthers, formerly with Pratt & Thompson, General Contractors, Kansas City, will be in charge of this new office.

Mr. Jos. W. Hays is just completing the organization of a corps of consulting combustion engineers to be known as Jos. W. Hays and Associates. The headquarters of the organization will be Michigan City, Indiana.

Mr. Hays has been finding it impossible for some time past to meet all of the demands upon his time, and for this reason is forming the organization.

Jos. W. Hays and Associates will be prepared to render consulting service in steam plants in all parts of the country. Every man in the organization will be a combustion expert of wide practical experience. No change will be made in the place of residence of any of these Associates. Each member of the organization will look after the engineering work in his immediate territory.

All communications should be addressed to Jos. W. Hays and Associates, Michigan City, Indiana.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review, in this column, such books and catalogs as are sent to us.

CONCRETE DATA FOR ENGINEERS AND ARCHITECTS is the name of a new booklet published by the *Portland Cement Association, 111 West Washington Street, Chicago, Illinois*, and contains in brief form many principles of concrete making. These principles have been verified by thousands of tests, and the information, as it is written in this booklet, consists in a readily available form of data which should prove of interest to the architect and engineer.

The Ingersoll-Rand Company, 11 Broadway, New York, has just issued a new 36-page bulletin describing their "Imperial" Type XPV Steam Driven Air Compressors. This type of compressor is built in a number of different types and sizes. Standard two-stage machines for 100 pounds discharge pressure, range from 246 to 4150 cubic feet per minute piston displacement. Single-stage compressors are built for furnishing air up to 50 pounds discharge pressure.

In their bulletin the manufacturers call particular attention to the steam valve gear used on these compressors and the automatic cutoff governor which regulates the compressor and which is operated by means of oil pressure. A copy of this bulletin may be obtained from the above company. Use the postal enclosed.

A pamphlet entitled "BLASTING DRILLED WELLS TO INCREASE THE FLOW OF WATER," by S. R. Russell, Civil Engineer, has just been issued by *E. I. du Pont de Nemours & Company*. Mr. Russell is one of the most widely known experts in explosives in the United States and is a member of the technical staff of the du Pont Company. His pamphlet embodies the result of studies made extending over a great number of years, and is considered to be the most authoritative discussion on the subject which has been published recently. It should be of especial interest to municipal and county engineers, farmers and all those who have had difficulty with the flow of water in drilled wells.

The Continental Pipe Manufacturing Company have recently published their Catalog Number 18, containing

250 pages of interesting data together with many photographic illustrations of some of their largest installations of wood pipe. The catalog contains information collected by the company during its thirty years of experience in the wood pipe industry, including hydraulic data and flow tables useful in the design of water conduits for municipal supply systems, hydro-electric developments, irrigation, sewerage, drainage, paper mills and other industries. Descriptions and illustrations are given showing the wide range of uses of wood pipe. In the preparation of the volume much care has been exercised and its contents are of decided technical value. Catalog may be obtained from *The Continental Pipe Manufacturing Company, Seattle, Washington* or by writing *The Excavating Engineer.*

New Smith Concrete Mixer Catalog Just Out

The T. L. Smith Co. of Milwaukee has just published a new 48-page catalog, No. 405-C, describing and illustrating the Smith line of non-tilting concrete mixers, 4-S and 28-S sizes. Attention is directed to the efficiency of the end-to-center mixing action and to the speedy discharge obtained by extending the discharge chute two-thirds of the way into the drum. Among the new features mentioned are the Smith water-measuring tank, the use of 4-cylinder truck-type motors for the larger sizes and a choice of either 2-cylinder or single-cylinder motors for the 7-S and the furnishing of rubber-tired wheels on certain sizes when specified. In addition to the usual specifications, dimensions, proportion and capacity table, the new catalog also contains a very practical table on weights and cubical contents as boxed for export. Copy may be obtained from the above company. Use postal enclosed in this issue of The Excavating Engineer.

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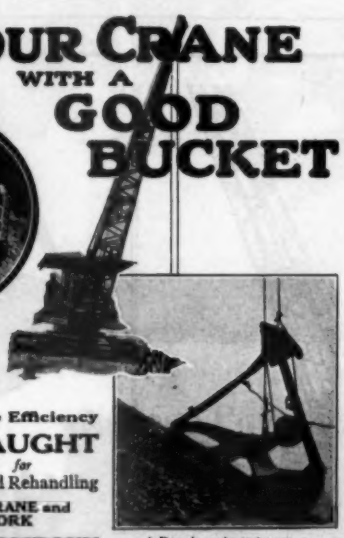

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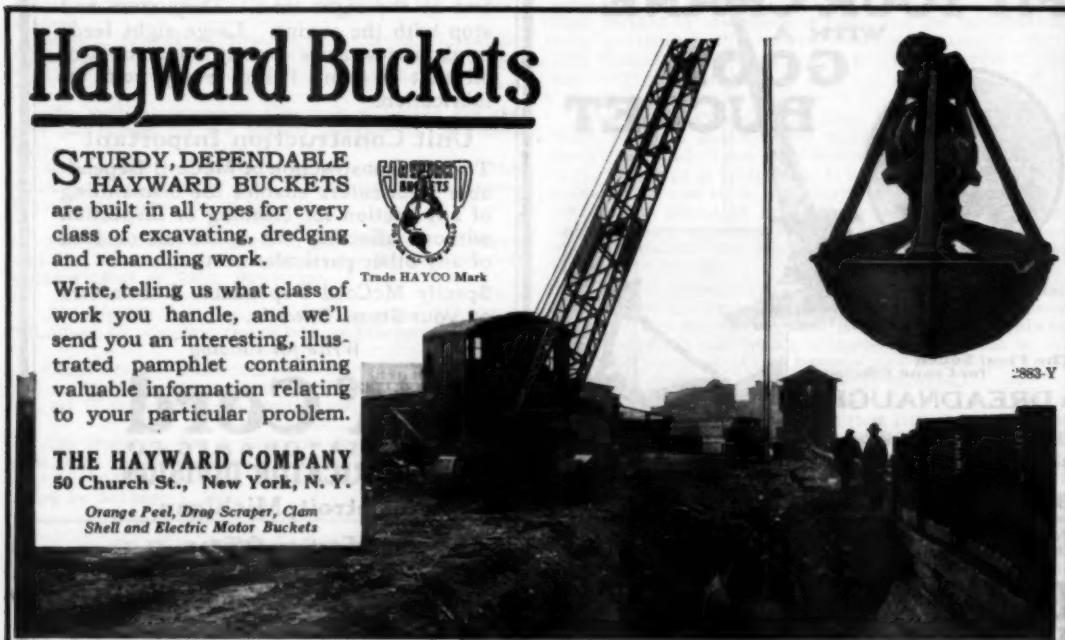

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Hammer Type

Rock Drills

A FEW operators bought their first CP Rock Drills as a matter of experiment while records of satisfactory performance in similar work encouraged many others to install CP drilling equipment.

Additional CP Rock Drills have followed these original installations solely upon the merits and work accomplished by the first few CP Drills placed in operation.

It is a rule, rather than an exception, that today these same operators prefer CP Rock Drills when they are either enlarging their present rock drill equipment or are replacing obsolete and inefficient drills with modern economical types.

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Rock Drills

Cleaning up with a Bucyrus 20-B revolving shovel. The material was used for backfilling footings. Timothy Lynch, Superintendent, is the figure in the white shirt beside the truck.

General View of the Operations Showing One of the Side Walls, Pile Driver at Work and 20-B Bucyrus Cleaning Up in Background

Digging the Foundations for the Interboro Rapid Transit Company's New Administration Building and Shops in New York City